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Implications of technological change and austerity for employability in urban labour markets

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Abstract

Over the last decade two key changes affecting employability, labour market operation and policy delivery are austerity and the expansion of the use of information and communication technologies (ICT), especially Web-based technologies. Increasingly, given pressures for cost savings and developments in ICT, employers' recruitment and selection strategies are at least partly Web-based, careers guidance and public employment services are moving towards 'digital by default' delivery and job seekers are expected to manage their job search activity and benefit claims electronically. So, what are the implications of austerity and technological change for employability? This article presents a critical review of the literature on ICT and its relation to, and implications for, employability in a context of austerity. A new framework for employability is presented and those aspects of employability where ICT plays a key role are highlighted. It is concluded that in the context of austerity and technological change more is demanded of individual job seekers/ workers, as they are expected to take greater responsibility for their marketability in the labour market. This means that individuals' attributes and skills are of enhanced importance in conceptualisations of employability. ICT skills have a key role to play in employability, but not at the expense of more conventional social skills which remain very important alongside digital literacy.

Employability Information and communications technologies (ICT) Internet Labour
market Responsibility

Introduction

One key feature of recent change in urban labour markets is the increasingly important role of information and communication technologies (ICT) in several aspects of their operation. Such technologies have impacted on the nature and profile of employment across many sectors and occupations (UKCES, 2014). Their use has implications for where and when work is undertaken (Felstead, 2012). They have underpinned developments in job search, recruitment and selection practices and the delivery of employability services (de Hoyos et al., 2013). They have the capacity to expand the reach of employability services offering job search support, but conversely may exclude those without the access or skills to fully exploit these opportunities. They also provide means of surveillance of job seekers' behaviour.

Economic crisis and austerity have played an important role in enhancing the imperative to take-up ICT to support new ways of working and of service delivery. A desire for cost savings has prompted moves to 'digital by default' service delivery for employability services (for Great Britain see Lane-Fox, 2010; DWP, 2012) and it has been argued that this philosophy has "created an environment of *technological compulsion*" (Clayton and Macdonald, 2013: 947), in which use of technology needs to be accepted as part of an emerging culture of employment. Budget cuts have stimulated the implementation of e-services in public employment services (PES) internationally (Murray, 2011).

This article contributes to existing knowledge by presenting a critical review of the literature on ICT and its relation to, and implications for, conceptualisations of employability in a context of austerity. It examines the changing practices of employers, labour market intermediaries and job seekers in the context of technological developments and other socio-economic factors. It presents a new framework for employability, and highlights those aspects where ICT plays a key role. Such a stocktake is timely given the pace and reach of recent technological changes and the context of austerity.

The overarching question addressed is: *What are the implications of technological change and austerity for employability?* More specific questions examined are:

1. What does the enhanced pervasiveness of ICT in the operation of labour market in an age of austerity mean for conceptualisations of employability?
2. What does employers' use of ICT in an age of austerity mean for employability?
3. What does labour market intermediaries' use of ICT in an age of austerity mean for employability?
4. What are the implications for individuals' employability of the increased pervasiveness of ICT on the nature and organisation of work and of use of ICT by employers and labour market intermediaries in an age of austerity?
5. [What are the implications for urban labour markets?](#)

Following a discussion about methodology, the article identifies key trends and developments since a previous *Urban Studies* special issue on employability around a decade ago (McQuaid et al., 2005). It outlines the shift from Web 1.0 to Web 2.0 technologies and use of social media and sets out what these developments mean for the nature of employment and organisation of work, recruitment and selection, the nature and delivery of labour market intermediary services and job search. This review is followed by the presentation of a new employability framework, which is deployed subsequently in identifying those aspects of employability where ICT plays a key role. The implications of use of ICT in the context of austerity are set out in turn for employers, labour market intermediaries and job seekers. The following discussion section highlights what the developments outlined mean in practice for the operation of labour markets, and addresses the question of whether there are features and implications which are specific to urban labour markets (vis-à-vis rural ones). The final section returns to the overarching question and concludes.

Methodology

This article draws on a large scale scoping review of academic databases and websites of relevant organisations (in Europe and North America), supplemented by further references from key contacts engaged in policy, addressing the question: 'What role does ICT play in affecting employability?' (de Hoyos et al., 2013). In accordance with the methodology for scoping reviews (Armstrong, 2011; Arksey and O'Mally, 2005), following the definition of the research question, the review process involved identifying and selecting relevant studies, summarising and integrating evidence, and consulting ICT and policy experts. Although conducted in a systematic and transparent way, scoping reviews place fewer limitations than systematic reviews in relation to the types of study designs considered and the search terms used, and involve proceeding iteratively in a reflexive way. They are appropriate where the topic area in question is broad, as it is here. Evidence from the review is used to develop a new employability framework and to highlight aspects where ICT plays a key role. Key points are illustrated by findings from primary research on crowdsourcing and on job search in urban labour markets.

Review of key trends and developments

Key features of the development of Web-based technologies

Use of computers grew in the 1960s. After 1990 the pace of change around Internet technologies accelerated with the development of Web browsers and search engines. From the late 1990s increasing numbers of employers, job seekers and labour market intermediaries used the Internet for recruitment and selection, job search and accessing labour market information. In the middle of the first decade of the 21st century there was a shift from the rather static and documentary 'Web 1.0' which facilitated 'one-to-one' communication to the increasingly dynamic, interpersonal and personally customised nature

of 'Web 2.0', characterised by relationship-based 'many-to-many' social media communication tools and peer-produced 'commons knowledge' (Hooley, 2012; Lievrouw, 2012). With this 'Web 1.0' to 'Web 2.0' transition the Internet became a "central aspect of contemporary network societies" (Loader and Dutton, 2012: 610). The speed of ongoing technological developments has meant a shortening of the lifecycle of ICT skills, necessitating continuous learning and upskilling on the part of users (CEPIS, 2006).

The changing nature of employment and organisation of work

Economic crisis has been associated with downsizing and increasing use of precarious, part-time and temporary employees (Standing, 2011). New uses of ICTs have changed the practices and possibilities of work, prompting shifts in workplace organisation and transformations in organisational cultures and structures (Barnes, 2012). Web-based technologies have the potential to transform the nature and work spaces of employment. Online work can be done from anywhere in the world or on the move, so making the boundaries of urban labour markets more porous. ICTs have changed the nature of entrepreneurship and self-employment, facilitating flexible ways of working, which in turn have uncovered opportunities for those who have experienced difficulties in accessing the labour market and opened up new opportunities for study alongside employment. One new form of employment is crowdsourcing/e-lancing; (i.e. use of the internet to access and undertake paid work [Green et al., 2014]). The development of crowdsourcing platforms enables 'buyers' (i.e. employers) to post tasks (i.e. jobs) on the Internet, which 'sellers' (i.e. workers/contractors) then bid to undertake.

Recruitment and selection

ICTs have impacted on the nature of recruitment and selection for some vacancies. Web 1.0 job boards (enabling employers to advertise jobs more cheaply and job seekers to see a

wider range of vacancies than formerly) can be seen as representing the migration of some traditional offline recruitment channels (e.g. traditional newspaper adverts) to the Web (Ettinger and Kijl, 2009). Employers can post jobs on their own organisational website, on general or specialist jobsites and on a PES website. Some jobsites provide a full online service for all job seekers: they advertise vacancies on behalf of employers and recruitment agencies, and registered users can receive email job alerts, apply for vacancies, manage applications and store a CV online, making it available for searching by recruitment agencies.

Tools associated with Web 2.0 include blogs, online social networks and virtual worlds. Web 2.0 and social media tools enable employers to engage with job seekers and vice versa (CIPD, 2014). Social media enables employers and job seekers to gain new insights into each other's activities and this may help in the matching process. For job seekers the use of jobsite apps on mobile devices offers the opportunity for greater flexibility and discretion in job search than when they use computers for such purposes. Web 2.0 applications can also help job seekers to build large scale weak relationships of the type expounded by Granovetter (1974) as being of key importance in job search (Ettinger and Kijl, 2009).

Less attention has been paid to the use of ICT and web-based technologies in selection than in recruitment (Stone and Dulebohn, 2013), and there is a lack of comprehensive evidence available. Traditionally, recruitment and selection processes have involved applicants filling in hard copy paper-based forms, which are then reviewed by the employer, who then selects candidates to be interviewed in person. In contrast, e-selection encompasses the use of some or all of Web-based job analysis, electronic job applications, Web-based tests, video-conference interviews, etc. Possible advantages of e-selection systems include faster assessment and selection procedures, a reduction in administration costs through automatic screening, enabling electronic interviewing and facilitation of use and storage of information on applicants, so enhancing efficiency and reducing costs which is important in a context of

austerity. However, use of e-selection systems may also have dysfunctional consequences: by focusing attention on efficiency and cost savings attention can be drawn away from recruiting the most suitable/qualified applicants.

The nature and delivery of labour market intermediary services

ICT has impacted on the nature and delivery of labour market intermediary services in several ways, three of which are highlighted here: first, the movement towards 'digital by default' service delivery for payment of benefits and delivery of careers information, advice and guidance services; secondly, the utilisation by the PES of ICT in analysing data on unemployment benefit claimants and use of resultant profiles to allocate claimants to support services; and thirdly, use of ICT in encouragement and surveillance of claimants' job search behaviour.

First, in relation to 'digital by default' service delivery, PES systems for advertising job vacancies to benefit claimants have developed considerably with advances in technology, evolving from cards on boards in jobcentres to the launch of Universal Jobmatch (an online vacancy database and recruitment website) in 2012 in Britain. Benefit claimants can be required to register on the Universal Jobmatch website as a condition of receipt of benefit, and are encouraged to create a CV and upload it so that it can be easily sent to employers. In an ongoing change to the benefits system in the UK most Universal Credit claimants will apply online for benefits and manage their claim through an online account (House of Commons Work and Pensions Committee, 2014). Likewise careers information, advice and guidance services are increasingly delivered, at least in part, via the Web. Since the mid-1990s there has been a proliferation of career-related websites which have sought to provide careers information in a variety of forms (Hooley, 2012). Some of the more sophisticated and comprehensive self-help online delivery websites provide a suite of services for different users, including generic information on key training initiatives, funding sources to support

training, industry profiles, guidance on writing CVs, cover letters and applications, interview skills, and self-help tools enabling individuals to take personality tests online, ascertain their strengths and find information on careers that are suited to them, and search for relevant courses and vacancies.

Secondly, profiling is used by the PES in various countries as a diagnostic method to assess prospects of unemployed people to access work and so segment them to assist with planning for, and sequencing of, interventions and support (Weber, 2011; Loxha and Morgandi, 2014). Developments in ICT facilitate collection and analysis of information on unemployed benefit claimants and their characteristics, on jobs and their features (including person and role requirements, hours of work, pay, location, etc.), on education and training courses, and services available to support job seekers. In theory, such data and analysis thereof should enable personalisation of services, as appropriate to individuals' needs and capabilities, within the constraints of resources available (Wijnhoven and Havinga, 2014). This greater personalisation (where resources permit) and associated better matching of individuals to training/jobs, should facilitate more effective labour market operation.

Thirdly, ICT can be used for surveillance of target populations, notably claimants of out-of-work benefits. Surveillance can have positive or negative connotations (Pleace, 2007). In Britain Jobcentre advisers are able to monitor claimants' job search activity between interviews at the jobcentre and so use technology to facilitate a more interactive and personalised approach to supporting claimants (House of Commons Work and Pensions Committee, 2014). This may include use of text messages as a low cost and potentially high impact means of encouraging claimants to take action. For instance, results from a field experiment in Bedford, England, involving a randomised control trial testing the effectiveness of mobile phone messaging in compelling job seekers to attend recruitment events showed that personalised text messages from a named advisor to a named claimant significantly increased the likelihood of attendance at such events. This was particularly marked when

the message invoked a sense of reciprocity in the message recipient (in this particular experiment the message indicated that a place had been booked by the advisor for the claimant at an event, and wishing them luck) (Sanders and Kirkman, 2014). Conversely, ICT can be used to monitor claimants' job search activity: for instance data gathered on their activity via Universal Jobmatch may inform imposition of sanctions where job search criteria for receipt of benefits are not met.

A new framework for conceptualising employability

The review above highlights the key role played by ICT in labour market operation. So, (1) *what does the enhanced pervasiveness of ICT in the operation of labour market in an age of austerity mean for conceptualisations of employability?* McQuaid and Lindsay (2005) set out an employability framework which acknowledged the importance of both supply-wide and demand-side factors for employability and made a broad three-fold distinction between individual factors, personal circumstances and external factors. A decade on, these retain their importance, but in the context of the increased pervasiveness and imperative of using ICT in the context of austerity, a new employability framework is presented in Figure 1, taking account of some of the issues emerging from the scoping review on the role of ICT in affecting employability, and giving greater prominence to selected components.

<Figure 1>

The new employability framework has one overarching row relating to enabling support factors (encompassing labour market intermediaries from the public, private and voluntary sectors) and five columns. The first (and longest) column relates to individual factors, distinguishing demographic factors, health and well-being, economic position, labour market and job seeking knowledge, adaptability and mobility, and attributes, skills and qualifications (including ICT skills). The second column relates to individual circumstances, encompassing

household circumstances, household work culture and access to resources (including ICT hardware and software, financial capital, social capital, cultural capital and transport). In a departure from McQuaid and Lindsay's (2005) employability framework, employer/organisational practices are afforded a separately identifiable and central position in the new employability framework in Figure 1, in recognition of the important role played by employers in employability and of the role of ICT in shaping organisational culture, recruitment and selection practices and working practices. The fourth and fifth columns separate local contextual factors – such as features of local employment (including the quantity, quality and location of jobs vis-à-vis residences and local transport networks), local work culture and local labour market operation and norms, from macro level factors – including the regulatory regime, welfare regime and institutional factors (including what and how services are delivered), employment and education policy, and macroeconomic factors (where the context of austerity is especially important).

The new employability framework underscores the continued pertinence of existing conceptualisations of employability, but suggests that with the enhanced pervasiveness of ICT a wide array of individual factors impinge on employability, and that the role of enabling support factors and of employer/organisational practices are worthy of greater prominence in conceptualisations of employability. Table 1 details those aspects of employability where ICT already plays (or has potential to play) a key role. These aspects are discussed in more detail below.

<Table 1>

Implications for employability of use of ICT by labour market actors in an age of austerity

The preceding review indicates that developments in ICT, and specifically the growing use of Web-based technologies for service delivery, are reshaping at least some aspects of labour markets and of employability. This section assesses implications for employability of the use of ICT by employers, labour market intermediaries and job seekers in an era of austerity.

Employers

While in theory Web-based technologies and social media can be used by all employers, each employer needs to decide how to and when to use them. The extent to which, and the ways in which, employers make use of ICT in work organisation, facilitating access to training, recruitment and selection (Moon, 2007), and providing opportunities for flexible working, varies over time and space, by organisation size, by sector and occupation, and in accordance with the state of the macro economy. So, (2) *what does employers' use of ICT in an age of austerity mean for employability?*

In relation to recruitment and selection, most employers use ICT as well as (rather than instead of) more conventional recruitment and selection methods pre-dating the Internet. In the UK employers' own websites are amongst the most frequently used methods for attracting recruits (CIPD, 2009). The 2014 UK Employer Perspectives Survey showed that 21% of establishments reporting a vacancy used their own website as a recruitment channel (up from 17% in 2012) (Shury et al., 2014). Use of a free channel under their own control enables employers to be prescriptive about the way in which they ask for information to be submitted. They can use online systems to monitor candidates' scores as they proceed through online questionnaires, and preclude applicants who do not meet a specific threshold score from submitting a full application. In this way employers can use ICT to shape employability by managing volume and types of applications considered (De Hoyos et al., 2013).

Use of referral hiring by employers is longstanding, but social media (e.g. LinkedIn) opens up the possibility of hiring more staff through referral channels (Restell, 2012). The 2014 UK Employer Perspectives Survey showed that 7% of recruiting employers used social media (up from 3% in 2012). However, to set this in a broader context, 7% of recruiting employers in 2014 used speculative enquiries as a recruitment channel (up from 3% in 2012), and 30% used word of mouth/personal recommendation. So while use of ICT-enabled recruitment channels has increased, so demanding at least a threshold level of ICT skills amongst job seekers as a gateway to employability, there remains considerable reliance on informal recruitment, especially during recession (Hasluck, 2011).

In the context of austerity use of e-recruitment/e-selection systems and of informal recruitment channels is likely to impact negatively on employability of disadvantaged groups in the labour market. *Ceteris paribus* such groups are adversely affected by a relative lack of formal qualifications and recent work experience which means that they are more likely to be screened out of consideration in Web-enabled recruitment and selection, and also by a lack of appropriate connections to employers and employees to access vacancies advertised informally. On the other hand, use of ICT by employers to change working practices and to enable flexible working (including working from home and teleworking) can enhance possibilities for employment of individuals who might require such flexibility (e.g. those with health problems, caring responsibilities, etc.).

Labour market intermediaries

In the context of austerity and developments in ICT labour market intermediaries are moving increasingly towards a facilitating role and away from a face-to-face direct delivery role; indeed as staff cuts have taken place in intermediary organisations, e-services are seen increasingly as the solution to capacity issues (Murray, 2011). So, (3) *what does labour market intermediaries' use of ICT in an age of austerity mean for employability?*

With increased use of Web-based service delivery the onus is on intermediaries to make labour market information, associated tools to facilitate labour market matching and operation, and access to training materials (for individuals and employers) as transparent as possible and to enhance use of, and tailoring of, online services to meet (local) labour market needs. This shifting role of intermediary staff has implications for their own employability, and indirectly on that of those whom they advise. Intermediary organisation staff members need to complement knowledge of labour market information sources with technical and soft skills to use ICT effectively and to operate as e-coaches to encourage and assist in use of e-services. They need to advise individuals on how to take responsibility for their ICT skills and deployment thereof. They also need to highlight the importance of speed of responsiveness to job vacancies in a labour market that operates on faster turnaround times as use of e-recruitment and e-selection practices increases.

As the monitoring and support functions of the PES increasingly involve automatic vacancy matching, use of e-workbooks to monitor the actions and progress of individual job seekers, and use of social media for communication, access to ICT and possession of at least a minimum threshold level of digital literacy is a prerequisite for employability.

Individuals – especially job seekers

The review of key trends and developments and the preceding sub-sections focusing on the use of ICT by employers and labour market intermediaries have indicated that the labour market and job search environment in which individuals are operating has been shaped by, and is continuing to be influenced by, developments in ICT and austerity. The internet has afforded some individuals opportunities to organise their working lives in ways that are different from those previously possible and to work more flexibly. It has also altered the process of job search. So (4) *what are the implications for individuals' employability of the*

increased pervasiveness of ICT on the nature and organisation of work and of use of ICT by employers and labour market intermediaries in an age of austerity? This sub-section addresses this question by focusing on two issues. First it considers crowdsourcing as an example of a new Web-enabled means of working and highlights its implications for individuals' employability, and secondly it focuses on implications for employability of the use of ICT in job search.

In *crowdsourcing* the 'buyer'-seller' relationship is rather different from the conventional employer-employee relationship (Aguinis and Lawal, 2012), in that more costs fall on the 'seller' (Green et al., 2014). Crowdsourcing has been linked to greater flexibility (e.g. in terms of possibilities for working from home at times that suit the seller) at the cost of greater insecurity, more fragmented forms of working, an increase in mini jobs (Bergvall-Kåreborn and Howcroft, 2014) and enhanced precarity of employment. Responsibility for employability rests solely on the seller. To be successful 'sellers' need to be proactive in seeking work, responsive to demands of buyers, and to have good organisational, time management and planning skills, self-discipline and communication skills (to liaise with buyers and pitch for work). Self-efficacy, self-motivation and confidence are more crucial for operating in a crowdsourcing environment than in many conventional jobs. 'Sellers' also need a threshold level of ICT skills to be able to manage communication with 'buyers', and some may need specific computing skills if they are undertaking particular types of work (e.g. Web development applications) via crowdsourcing. Alongside these employability demands, crowdsourcing can offer opportunities for 'sellers' to build work experience, to hone existing skills and to develop latent skills – including in sectors and roles where they may have had no previous employment experience, so enhancing their employability (Green et al., 2014).

Turning to *job search*, the Internet has become a key tool for those looking for work, but importantly for individuals' employability, it is used alongside more traditional job search

methods (Green et al., 2012; Crang et al., 2006). This means that the demands on individuals have increased: the pervasiveness of ICT in the labour market brings a requirement for new skills, alongside conventional ones. Most obviously, the increased importance of ICT skills as 'gateway skills' in navigating and participating in the labour market and accessing associated enabling support services means that 'digital literacy' (i.e. the ability to use the online environment, to search and to make contacts, etc.) has become a central component of employability. But what precisely does digital literacy entail? Hooley (2012) has identified 'seven Cs' of digital career literacy (changing, collecting, critiquing, connecting, communicating, creating and curating), possession of which is likely to enhance an individual's employability in the short- and longer-term. The 'seven Cs' are not so much about specific technical skills (albeit ability to access and knowledge of how to use ICT is assumed), but more about effective use and assessment of information, of building networks and cultivating relationships, and marketing of attributes and skills for job search, employment and career building purposes, as increasingly important aspects of individuals' employability.

Nevertheless, at the most basic level access to ICT and ICT skills have become a fundamental component of individuals' employability. The so-called 'digital divide' has long been a matter of concern for policy makers as digital exclusion is linked with social exclusion (Policy Action Team 15, 2000; Devins et al., 2002; Selwyn, 2004). Access (including issues of physical access to hardware and software and affordability thereof), motivation (encompassing lack of interest in and/or lack of perceived need to use ICT), lack of relevant skills and low confidence have all been recognised as factors underlying digital exclusion. Yet skills deficits have become relatively more important over time vis-à-vis cost issues (ONS, 2014) as a crucial element in digital exclusion (Klecun, 2008). Internet access has increased markedly over recent years: in Britain 84% of households had Internet access in 2014, up from 57% in 2006 and access to the Internet using mobile phones more than doubled between 2010 and 2014, from 24% to 58% (ONS, 2014). However, the narrowing

of the digital divide (measured by increasing numbers who are digitally included) masks the deepening severity (i.e. intensification) of the divide, as fewer digitally excluded individuals fall further behind the rest of society.

Although in theory the internet reaches everyone, in practice young and highly qualified job seekers are most likely to use the internet for job search (Green et al., 2012; Moon, 2007), while less qualified and older job seekers are less likely than average to do so. Evidence from an empirical survey of digital inclusion activity in Sunderland in north-east England conducted towards the end of the first decade of the 21st century suggested that respondents from manual and routine groups perceived technology to have less impact on their employment and employability than residents in managerial and professional and in intermediate groups (Clayton and Macdonald, 2013). After all, access to and use of ICT did not address other barriers to employment and could, in fact, serve to heighten competition for jobs by bringing vacancies to the attention of more people within and beyond the local area. Indeed, Moon (2007) has argued that the internet is ineffective in enhancing the welfare of the labour market because it concentrates on skilled workers.

As more information is easily available via ICT on employers and on specific vacancies and job roles, job seekers can learn much more about the particular position they are applying for and on the organisational context, and so tailor their applications accordingly – and there are increasing expectations that they will do so. Social media offers new paths to find connections to jobs by making it relatively easy to search for acquaintances and friends of friends who have links to specific employers (Green, 2012). Access to timely ‘insider’ information can enhance job seekers’ employability, as highlighted in a study of the determinants of labour supply in low-skilled sectors in the UK which contrasted the fast-paced ‘hot’ networking of migrant workers with close and distant connections about job opportunities across highly active, vibrant and geographically extensive social networks which enabled migrant job seekers to apply for vacancies soon after they became live, with

the much more 'tepid' networking of unemployed British job seekers (Green et al., 2013). The use of ICT has altered the temporal contours of job search, enabling job seekers to apply for jobs online at any time on a 24/7 basis – and enhancing the expectation that they should do so. Hence, in relation to job search employability is about both individuals' reactivity and proactivity.

Discussion

In practice the interactions of the ways in which different labour market actors make use of ICT at a time of austerity can, in certain circumstances, have dysfunctional consequences with negative implications for employability. For example, use of ICT means that it can be easy and quick for individuals to apply for jobs indiscriminately in a 'scattergun'/'spray and pray' manner, without paying attention to tailoring their applications to the vacancies in question: , *"you upload your CV, all you have to write is a cover letter, then you could apply to about 20 jobs in about an hour ... so much easier than running around handing out CVs"* (Tunstall et al., 2012: 47, quoting a young job seeker). When job seekers behave in this fashion, use of general purpose online job boards can lead to employers getting large numbers of applicants, including many unqualified applicants for the position in question. To reduce the likelihood of such a situation arising it is logical for employers to try to reduce the workload on their human resources staff by not using general purpose online vacancy systems and/or by advertising on small niche job boards and/or instead by making job seekers work harder to apply by making the recruitment process more onerous (Coombs, 2013). Alternatively, when e-recruitment results in large number of applicants employers may choose to close vacancies as soon as they receive what they deem to be sufficient numbers of applicants, rather than setting a pre-specified closing date. This means greater onus on job seekers to apply quickly for vacancies if they are to be successful, so placing candidates without easy access to the internet at a disadvantage (Tunstall et al., 2012). In the face of excess applications some employers dispense with Internet-enabled recruitment

and instead resort to use of informal recruitment methods, especially for less-skilled job roles for which local workers are required. In such circumstances ‘who you know’ is important for employability of job seekers.

There is a particular danger of such a downward spiral arising when conditionality dictates that benefit claimants have to apply for a pre-specified minimum number of jobs per week and then employers receive large volumes of applications (including unsuitable/spurious ones). A field experiment in 2011 undertaken in three cities in Britain revealed that less than a third of applications received a positive response (Tunstall et al., 2012), so providing supporting evidence for anecdotal accounts of prolonged searches by job seekers, generally with no response from employers. Supplementary interviews with young job seekers revealed that in some cases this demotivation and frustration led to less effort being put into subsequent job applications. In turn, recognising that use of the PES job vacancy system can generate relatively large volumes of applicants who are not interested in the post, but rather instead are treating their application as ‘a *tick box exercise*’ (Tunstall et al., 2012). This, in turn, may lead to a negative vortex (see Figure 2), from which there are no ‘winners’.

<Figure 2>

More positively, ICT has created new opportunities for employers and most job seekers to access more easily and cheaply a wider range of labour market information and more potential applicants/vacancies than was possible previously. ICT has altered the temporal contours of labour markets and the geographical reach of ICT brings with it the potential to alter spatial topography also. *So, (5) what are the implications of the findings for urban labour markets?*

Traditionally the operation of local labour markets is highly localised but with the increased pervasiveness of ICT it is possible to conduct job search beyond the local area – nationally

and internationally. Indeed, the European Job Mobility Portal (EURES) Website has been designed to advertise vacancies across the European Union with the aim of facilitating international labour mobility, so making the boundaries of national labour markets more porous. On UK-based job search websites it is possible routinely to search by location. This suggests that differences in access to job-related information within urban labour markets and between urban and rural labour markets are eradicated as the Internet enhances their geographical scope. The enhanced quantity of labour market information available via ICT can result in wider and deeper searches by workers, job seekers and employers, and in lower cost and faster speed of labour market transactions. This has the potential to crowd out local labour (Kinder, 2000); so paradoxically, in extending geographical reach; the Internet can act both to expand and curtail access to employment opportunities.

The role of ICT in unbundling of the conventional relationship between homes and workplaces associated with urban splintering (Graham and Marvin, 2001), and the increasing inequality between people and places related to splintering labour markets (MacKinnon, 2015), are indicative of intensification of divisions within and between urban labour markets. In socio-spatial terms, those individuals who are poorly networked (socially and electronically), and with deficiencies in attributes, skills and qualifications associated with employability, are most likely to face labour market exclusion or marginalisation in employment and to reside in the least attractive urban neighbourhoods. By contrast, residents in more prosperous urban neighbourhoods, with better access and ability to use ICT and local and non-local social networks for effective jobs search, are best able to compete for good quality non-virtual and virtual employment locally and globally. The outcome is likely to be socio-spatial polarisation.

The potential for integration via ICT of vacancy/ job search information with provision of other services impacting on employability (e.g. transport and childcare) can facilitate local labour in accessing local jobs. *Ceteris paribus* this potential is likely to be greater in urban

than in rural areas, and within urban areas in more accessible than in less accessible neighbourhoods, because of a greater density of such support services in the former than the latter in each pair of areas compared. Hence, in facilitating matching of individuals to non-virtual jobs (whether paid or unpaid) and to place-based support services, ICT is potentially most supportive of employability amongst those who are already advantaged in labour market terms.

Conclusion

This article has presented a critical review of the literature on ICT and its relation to and implications for employability in the context of austerity. It has made a conceptual contribution to debates on employability by presenting a new framework for employability and identifying those aspects of employability where ICT plays a key role. It has addressed the overarching question: *What are the implications of technological change and austerity for employability?* It concludes that ICT impacts on all categories of labour market actors given the way that ICT pervades the nature, content and organisation of employment, the move to digital by default service delivery and the associated emphasis on virtual self-help services in the context of austerity.

ICT skills have become a central component of employability skills. At least a basic level of ICT skills are required for many jobs and such skills also open up opportunities for new ways of working beyond the confines of local labour markets through crowdsourcing/e-lancing. Use of ICT by employers in recruitment and selection and by labour market intermediaries in provision of information, advice and guidance services means that digital literacy is increasingly important in navigating the labour market and associated support services. It is also becoming a prerequisite for those undertaking recruitment and selection and for those involved in online service delivery. Yet not all individuals possess basic ICT skills or the confidence, capability or the means to deploy them. Nevertheless the operation of the PES

and benefits system in Britain (and many other countries) assumes that benefit claimants have access to PCs or smart phones to access the Internet on a regular basis. In the context of the pervasiveness of ICT in labour market operation and the accelerating pace of at least some job match transactions via Web-based technologies, it is argued that the digital divide has become deeper – and austerity measures have tended to deepen it further via reduction in opportunities for free public access to PCs and associated support services in libraries, community centres, etc.

Yet it would be wrong to suggest that technical ICT skills and broader digital literacy skills have become so important as to usurp other elements of employability. It is argued that what has emerged is a case of ‘as well as’, not ‘instead of’, in what might be conceptualised as a kind of ‘conventional employability plus’. The article has highlighted the importance of informal as well as formal recruitment and selection processes and of ‘social’ as well as ‘technical’ skills in employability. While ICT has impacted on the operation of urban labour markets, in a climate of austerity the social skills needed for effective face-to-face networking arguably are more important than ever. So while individuals’ capability to deploy ICT effectively for enabling new ways of working, for job search, and for skills development more generally needs to be promoted, this should not be at the expense of use of conventional methods and practices.

Technological change and austerity in urban labour markets places ever greater demands on the individual. There is an enhanced emphasis on individuals’ attributes and skills, and their access to resources (including ICT), as they need to take greater responsibility for their ongoing marketability (Chertkovskaya et al., 2013). This responsibility entails individuals’ self-managing their employability and navigating their routes into, within and out of the labour market over the long-term. [This onus on the individual is likely to result in the reinforcement of pre-existing socio-spatial divisions within urban labour markets.](#)

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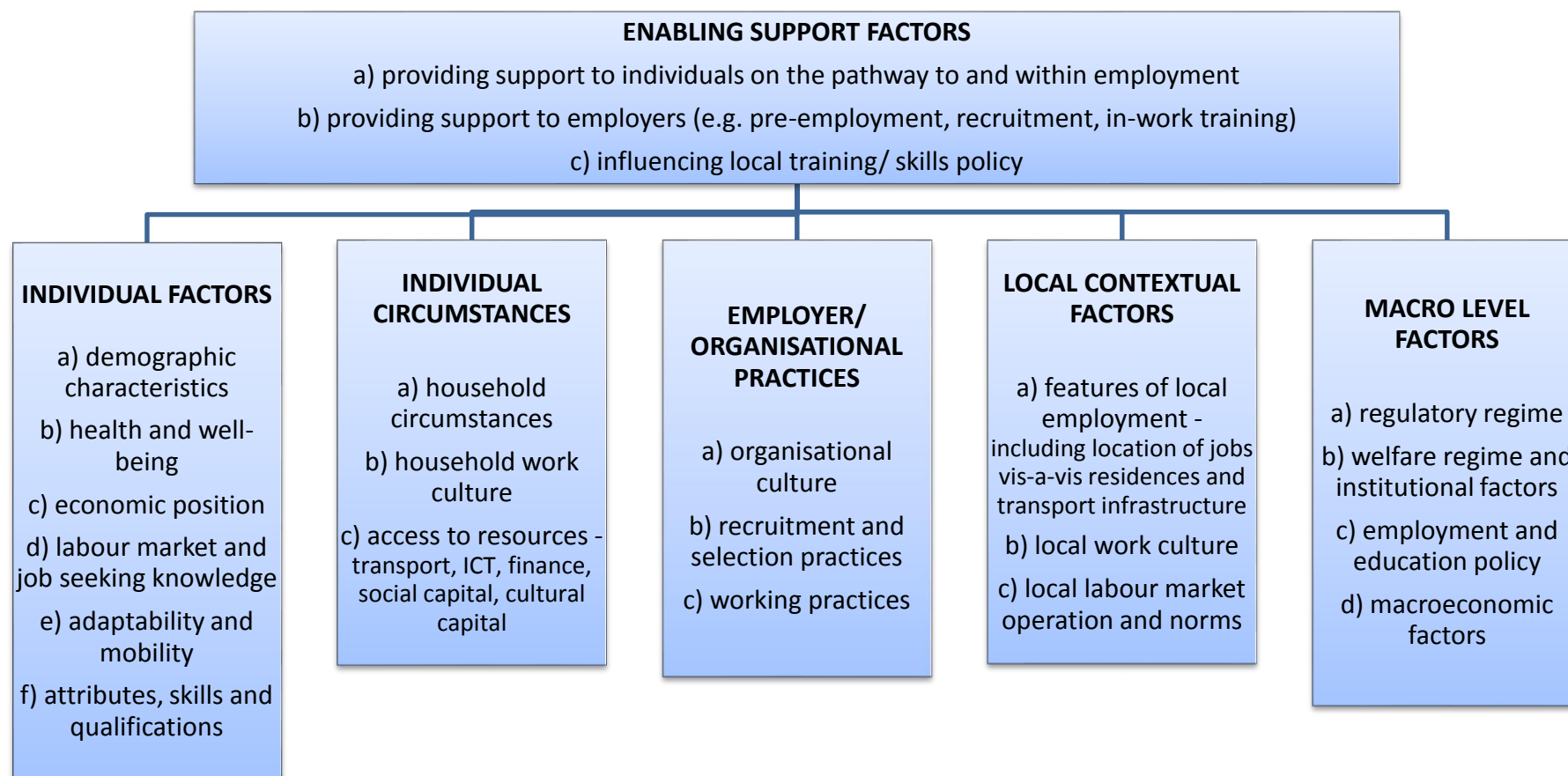
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Figure 1: Employability framework



(adapted from Green et al., 2013)

Table 1: Main aspects of employability where ICT plays (or has potential to play) a key role

<i>Factors</i>	<i>Aspect</i>
<i>Enabling support factors</i>	
<ul style="list-style-type: none"> providing support to individuals on the pathway to and within employment 	pre-employment preparation; training provision/ signposting to specialist provision; signposting/referral to non-employment/ training support services (e.g. health, housing, care, etc.); CV preparation; interview practice; job search advice and support; access to ICT skills provision; access to ICT hardware/software; job broking (including technology); job matching (including technology)
<ul style="list-style-type: none"> providing support to employers 	recruitment and selection; off-the-job and on-the-job training
<ul style="list-style-type: none"> influencing local training/skills policy 	adapting existing training programmes to meet local needs; facilitating opportunities for business and employee voice
<i>Individual factors</i>	
<ul style="list-style-type: none"> health and well-being 	Disability
<ul style="list-style-type: none"> labour market and job seeking knowledge 	awareness of labour market opportunities, employers' recruitment practices; knowledge and use of formal/informal information sources; ability to fill in a CV and perform well at interview; realistic approach to job targeting
<ul style="list-style-type: none"> adaptability and mobility 	career management and adaptability
<ul style="list-style-type: none"> attributes, skills and qualifications 	self-efficacy; proactivity, digital literacy/e-skills; communication skills
<i>Individual circumstances</i>	
<ul style="list-style-type: none"> household circumstances 	direct caring responsibilities
<ul style="list-style-type: none"> access to resources 	access to ICT; access to social capital (including for job search)
<i>Employer/organisational practices</i>	
<ul style="list-style-type: none"> organisational culture 	whether support (and fund) on-the-job/off-the-job training (including e-learning); whether provide opportunities for employee voice
<ul style="list-style-type: none"> recruitment and selection practices 	how and where jobs are advertised – including internet/e-based advertising; use of e-screening/e-selection
<ul style="list-style-type: none"> working practices 	flexible working; teleworking; home working
<i>Local contextual factors</i>	
<ul style="list-style-type: none"> local labour market operation and norms 	recruitment norms: where and how different types of jobs are advertised locally
<i>Macro level factors</i>	
<ul style="list-style-type: none"> welfare regime and institutional factors 	benefits system administration; role of public employment service; ICT policy; use of ICT in public service delivery

Figure 2. Potential vortex of conditionality to apply for vacancies via a PES online system at a time of high levels of worklessness

